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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/752,194

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Steven M. Colby

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02/03/2005

Steven M. Colby
P.O. Box 52033
Palo Alto, CA 94303

EXAMINER

NGUYEN, KIET TUAN

ART UNIT

PAPER NUMBER

2881

DATE MAILED: 02/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/752,194

Applicant(s)

COLBY, STEVEN M.

Examiner

Kiet T. Nguyen

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-27, 31-33 and 36-38 is/are allowed.
- 6) ☒ Claim(s) 1, 6, 9-19, 28 and 29 is/are rejected.
- 7) ☒ Claim(s) 2-5, 7, 8, 20, 30, 34 and 35 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20050201.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Objected Informalities

The disclosure is objected to because of the following informalities:

In The Claims

Claim 11, line 1, "the wherein" should be deleted.

Claim 30, line 2, "then" should be -- than --.

Claim 34, line 2, "shown in FIG. 7" should be deleted.

Claim 35, line 2, "shown in FIG. 7" should be deleted.

Appropriate correction is required.

Rejection Under 35 U.S.C. 102(e)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 6, 9, 15 and 18-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Croci et al. (US 2004/0151835).

Croci et al. (US 2004/0151835) disclose a method for forming an electron source used in a place of ionizing elements for mass spectrometry (see lines 1-5 of [0003]), which is performed by a mass spectrometer or mass analyzer. The electron source 4 includes an electron conductive wire filament 5 for generating electrons when heated; a plurality of carbon nanotubes 6 disposed on the surface of the filament 5; and a power

supply 7. A filament body is considered to be inherent in the Croci et al. (US 2004/0151835) electron source as Croci et al. (US 2004/0151835) disclose using the electron source as ionizing elements for mass spectrometry.

Rejection Under 35 U.S.C. 103(a)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 10-14, 16-17 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Croci et al. (US 2004/0151835) in view of Zubarev (US 2004/0155180).

Croci et al. (US 2004/0151835) disclose all the features as discussed above except boron nanofilaments as recited in claim 10; the generated electrons used for electron capture ionization as recited in claim 11; the generated electrons used for

electron impact ionization as recited in claim 12; the generated electrons used for electron chemical ionization as recited in claim 13; the generated electrons used for ion fragmentation as recited in claim 14; a mass filter as recited in claim 16; a sample source as recited in claim 17; and means for causing the generated electrons to contact an ion, fragmenting the ion using the generated electrons to produce an ion fragment, filtering the produced ion fragment and detecting the filtered ion fragment as recited in claim 28.

Zubarev (US 2004/0155180) discloses, in figs. 1-10, a mass spectrometry methods and apparatus including an electron filament 14 or 34 for generating electrons for electron capture ionization (see lines 1-3 of [0008]), electron impact ionization (see lines 4-5 of [0002]), electron chemical ionization (see lines 1-3 of [0035]) and ion fragmentation (see [0047]); mass filters 4 and 5; a sample source introduced into an electrospray ion source 2; and an ion detector 8 for detecting the filtered ion fragment. Therefore, it would have been obvious to one skilled in the art to use the electrons for electron capture ionization, electron impact ionization, electron chemical ionization and ion fragmentation; the mass filters and the ion detector in the Croci et al. (US 2004/0151835) method for analyzing ions, since Croci et al. (US 2004/0151835) disclose a method for forming an electron source used in a place of ionizing elements for mass spectrometry (see lines 1-5 of [0003]).

Using the boron material to make nanofilaments is considered to be obvious variation in design, since it well known in the art to use the boron material to make an electron emitter, thus would have been obvious to one skilled in the art to use the boron

material to make the nanofilament in the Croci et al. (US 2004/0151835) method for forming an electron source, as Croci et al. (US 2004/0151835) disclose using the carbon material to make the nanotubes on the filament.

Claims 21-27, 31-33 and 36-38 are allowed.

Claims 2-5, 7-8, 20 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 34-35 would be allowable if rewritten to overcome the objection(s), set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Reasons for indicating allowable subject matter

The prior art fails to disclose a filament assembly, a mass analyzing system and/or method, which includes means for applying a potential of approximately 70 Volts to an electron conductive wire or ribbon filament having a plurality of nanofilaments disposed on the surface thereof as recited in claim 21; means for generating electrons with energy of approximately 70 eV using an electron conductive wire or ribbon filament having a plurality of nanofilaments disposed on the surface thereof as recited in claim 24; or a plurality of nanoparticles disposed within an electron filament as recited in claim 31.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1) Zetli et al. disclose a field emission electron source using the boron material to make nanotubes;

2) Ahmed et al. disclose an electron source using nanoparticles for emitting electrons; and

3) Stengl et al. disclose a field ionization ion source using carbon nanotubes for emitting electrons to ionize a sample.

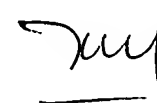
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiet T. Nguyen whose telephone number is 571-272-2479. The examiner can normally be reached on Monday-Friday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KN



KIET T. NGUYEN
PRIMARY EXAMINER